

12. (NEW) The elastomer mix of claim 10 wherein the starring agent is selected from the group consisting of carbonates, tin halides, and silicon halides.

13. (NEW) The elastomer mix of claim 3 wherein the diene elastomer has on the chain or at the end of the chain oxygenated carbonyl functions, carboxyl functions, amine functions or combinations thereof.

REMARKS

This amendment is submitted in response to the Office Action mailed on August 28, 2000, which was issued in the above-identified application. Applicant requests a three-month extension of time and encloses the required fee pursuant to 37 C.F.R. §1.17(a)(3). Upon entry of the amendments herein, Claims 1 and 3-13 will be pending in the present application. Support for the claim amendments and new claims may be found in the specification and claims as originally filed.

1. Claims are definite.

Claims 1-8 have been rejected under 35 U.S.C. §112, second paragraph as indefinite. In Claims 1 and 3, the Examiner alleges that in the phrase "...a synthetic polyisoprene having a majority of cis-1,4 bonds ...", it is unclear what is meant by the term "majority". Applicant respectfully submits that skilled artisans would understand that the term "majority" has a clear meaning in standard English. It is well understood that, without further qualifications, the term majority means greater than 50%. Applicant invites the Examiner's attention to a recent Federal Circuit decision wherein the Court held that "majority" means 50.001%+ and, therefore, 47.8% is not an equivalent. See Moore U.S.A., Inc. v. Standard Register Co., 56 U.S.P.Q2d 1225 (Fed. Cir. 2000).

Applicant respectfully submits further that a person skilled in the art of rubber chemistry would recognize that polyisoprene has carbon-hydrogen bonds, carbon-carbon single bonds, and carbon-carbon double bonds. The person of ordinary skill in the art would recognize that Applicant's usage of the phrase "having a majority of cis-1,4 bonds" indicates that, of the

carbon-carbon double bonds, greater than 50% are cis-1,4 bonds. No other interpretation is possible since (i) carbon cannot form stable double bonds with hydrogen and (ii) a molecule having more than 50% of its total carbon-carbon bonds as double bonds in the cis-1,4 configuration could not be an isoprenoid. Therefore, the term "majority" as used in Claims 1 and 3 is not indefinite.

The Examiner has also rejected Claim 2 under §112, second paragraph for use of the term "majority". Applicant respectfully refers the Examiner to the foregoing statement regarding the meaning of the term "majority". Applicant asserts that Claim 2 is definite.

The Examiner has also requested clarification of the proper reference of the amounts of filler in Claim 1, line 8. The amount recited refers to the white filler present in the filler mix. Therefore, Applicant has amended Claim 1 as suggested by the Examiner to insert the phrase "wherein said white filler is present" before the phrase "in the amount of". Applicant believes that the insertion of this phrase serves only to clarify the proper reference of the amounts and does not in any way limit the scope of the original claim.

The Examiner has additionally rejected Claim 4 alleging that it is unclear what is meant by the term "engrafted" and that it is unclear whether the carbon black or the diene elastomer contains the SiOH and AlOH surface functions. The Examiner has also alleged that is unclear whether the carbon black is grafted to the diene elastomer to some other moiety. In response to the Examiner's rejections, Claim 4 has been amended. Applicant asserts that as amended, Claim 4 is definite. Support for amended Claim 4 and new Claims 10-13 can be found in the specification as originally filed *inter alia* at page 5, lines 8-14.

Finally, the Examiner has rejected Claim 5 as indefinite because it is allegedly unclear whether the carbon black is associated with the first or second reinforcing filler. Claim 5 has been amended to more clearly indicate that the carbon black of reference in that claim is the carbon black of the second reinforcing filler of Claim 1.

In light of the above amendments and remarks, Applicant respectfully submits that Claims 1-8 are no longer indefinite and request that the rejections under 35 U.S.C. §112, second paragraph be withdrawn.

2. Claims are novel over the cited art.

Claims 1, 5, 7 and 9 have been rejected under 35 U.S.C. §102 as anticipated by Sandstrom et al. (U.S. Pat. No. 6,046,266). The Examiner alleges that Sandstrom et al. teaches elastomeric fillers containing ranges of filler, silica, and carbon black that overlap the instant claims. The Examiner further alleges that Sandstrom et al. teaches a ratio of coupling agent to silica that overlaps the instant claims.

Claims 1-3, 5, and 7-9 have been rejected under 35 U.S.C. §102(e) as anticipated by Matsuo (U.S. Pat. No. 5,929,157). The Examiner alleges that Matsuo teaches fillers comprising ranges of silica, and carbon black that overlap the instant claims. The Examiner also alleges that Matsuo teaches "...the use of additional diene such as polybutadiene containing 96% cis 1-4 bonds and styrene/butadiene rubber" (Office Action dated 08-28-2000 at page 4, paragraph 5). The Examiner further alleges that Matsuo teaches a ratio of coupling agent to silica that overlaps the instant claims. Finally, the Examiner alleges that example 2 of Matsuo meets the requirement of the instant invention that the amount of white filler in phr is greater than the amount of carbon black in phr minus five.

Claims 1-3 and 5-6 have been rejected under 35 U.S.C. §102(b) as anticipated by EP 799854. The Examiner alleges that EP 799854 teaches a filler mix comprising a majority of natural rubber and a range of carbon black that overlaps the instant claims. The Examiner further alleges that EP 799854 teaches carbon black having a specific surface area within a range that overlaps the instant claims.

Claims 1-3 and 7 have been rejected under 35 U.S.C. §102(b) as anticipated by EP 738614. The Examiner alleges that EP 738614 teaches ranges of elastomers, filler, silica, and carbon black that overlap the instant claims. The Examiner further alleges that EP 738614 teaches a ratio of coupling agent to silica that overlaps the instant claims.

Applicant respectfully traverses these rejections and asserts that the pending claims are not anticipated by Sandstrom et al., Matsuo, EP799854 or EP738614. Claims 2-9 are dependent on independent Claim 1. Therefore, the response to these rejections will be addressed primarily to Claim 1.

For a reference to anticipate under 35 U.S.C. § 102, "there must be **no difference**

between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention" (emphasis added). *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F. 2d 1565; 18 U.S.P.Q. 2d 1001; 18 U.S.P.Q. 2d 1896 (Fed. Cir. 1991), emphasis added. As expressed in *Richardson v. Suzuki Motor Co. Ltd.*, 868 F. 2d 1226, 1236; 9 U.S.P.Q. 2d 1913, 1920 (C.A.F.C., 1989), "[t]he **identical invention** must be shown in **as complete detail** as is contained in the...claim" (emphasis added). In order for the instant claims to be anticipated, there must be no difference between (i) the filler additives and (ii) the ratios and ranges of filler additives of the instant invention and the cited prior art.

Applicant invites the Examiner's attention to amended Claim 1 which recites, in part, "wherein the elastomeric matrix comprises more than 70 phr of natural rubber or synthetic polyisoprene having double bonds, the majority of which are cis-1,4 bonds...." This amendment is supported by the Specification as originally filed, e.g. at page 5, lines 14-18. Applicant asserts that the combination of the "more than 70 phr" and "majority cis bonds" elements is not taught by any of the cited art.

Sandstrom et al. not only fails to teach this combination of elements, it fails to teach the "more than 70 phr" of either natural rubber or synthetic rubber limitation at all. Sandstrom et al. teach at most 60 phr of cis 1,4-polyisoprene elastomer *inter alia* Col. 3, lines 2-3. Thus, Sandstrom et al. does not teach each and every element of instant Claim 1 as required for a rejection under §102.

Matsuo fails to teach the combination of these elements. Matsuo teaches that a cis content of not less than 30% is preferable where butadiene rubber is used. See Col. 3, lines 39-42. Applicant invites the Examiner's attention to the important chemical and physical differences between butadiene and polyisoprene known to one of ordinary skill in the art. Due to these differences, the cis content of butadiene taught by Matsuo is not applicable to the cis content of natural or synthetic polyisoprene rubber. Moreover, Matsuo provides no direct teaching regarding the percentage of cis bonds in natural or synthetic polyisoprene rubber. Thus, Matsuo fails to teach the combination of the "more than 70 phr" and "majority cis bonds" elements of instant Claim 1.

Matsuo fails to teach whether the silica, the surface-treated carbon black or both

are modified with SiOH and/or AlOH surface functions, and thus lacks the detail of instant Claim 1. See e.g. Matsuo at Col. 3, lines 51-56. Thus, Matsuo does not teach each and every element of instant Claim 1 as required for a rejection under §102. Consequently, neither Claim 1 nor claims which are dependent on Claim 1 are anticipated by Matsuo.

EP 799854 fails to teach a polyisoprene rubber in an amount greater than 70 phr. The highest amount disclosed is 65 phr of natural rubber in Table II-3. EP 799854 further fails to provide any teaching regarding the percentage of cis bonds in natural or synthetic polyisoprene rubber. Thus, EP 799854 fails to teach the combination of the “more than 70 phr” and “majority cis bonds” elements of instant Claim 1.

In addition, EP 799854 fails to teach whether the silica, the surface-treated carbon black or both are modified with SiOH and/or AlOH surface functions, and thus lacks the detail of instant claim 1. EP 799854 only teaches a ratio of silica to silica surface-treated carbon black which is “preferably 0.1 to 25% by weight” (EP 799854 at page 3, line 45), i.e from four to one thousand times more carbon black than silica. This range does not overlap the range set forth in pending Claim 1 wherein the amount of white filler is greater than or equal to the amount of carbon black in phr minus five phr. On the contrary, this teaches away from the instantly claimed invention by requiring that the amount of silica is substantially less than the amount of carbon black. Thus, EP 799854 does not teach each and every element of instant Claim 1 as required for a rejection under §102. Consequently, neither Claim 1 nor claims which are dependent on Claim 1 are anticipated by EP 799854.

EP 738614 fails to teach the combination of these elements. EP 738614 teaches vinyl 1,2-content of 30 to 80 where polybutadiene rubber is used. See e.g. EP 738614 at page 3, line 47. EP 738614 teaches a cis 1,4-content in the range of 93-99 percent where polybutadiene rubber is used. See EP 738614 at page 5, lines 12-13. However, EP 738614 provides no teaching regarding the percentage of cis bonds in natural or synthetic polyisoprene rubber. Thus, EP 738614 fails to teach the combination of the “more than 70 phr” and “majority cis bonds” elements of instant Claim 1.

EP 738614 fails to teach whether the silica, the surface-treated carbon black or both are modified with SiOH and/or AlOH surface functions, and thus lacks the detail of instant

claim 1. See e.g. EP 738614 at page 3, lines 48-51. Thus, EP 738614 does not teach each and every element of instant Claim 1 as required for a rejection under §102. Consequently, neither Claim 1 nor claims which are dependent on Claim 1 are anticipated by EP738614.

In view of the failure of Sandstrom et al., Matsuo, EP 799854, and EP 738614 to teach each and every claim limitation in the same level of detail, Applicant asserts that each of the cited references fails to anticipate Claim 1. Applicant, therefore, respectfully requests withdrawal of all rejections of instant Claim 1 and all dependent claims under 35 U.S.C. § 102.

3. Claims 1-5 and 7-9 are non-obvious over the cited art.

Claim 4 has been rejected under 35 U.S.C. §103(a) as unpatentable over Matsuo in view of Takeichi et al. (U.S. Pat. No. 6,008,295). The Examiner incorporates by reference allegations made regarding the teachings of Matsuo in the rejection under 35 U.S.C. §102(e). As stated above, the Examiner has alleged that Matsuo teaches elastomeric fillers where the ranges of filler, silica, and carbon black that overlap the instant claims. The Examiner has also alleged that Matsuo teaches “...the use of additional diene such as polybutadiene containing 96% cis 1-4 bonds and styrene/butadiene rubber” (Office Action dated 08-28-2000 at page 4, paragraph 5). The Examiner has further alleged that Matsuo teaches a ratio of coupling agent to silica that overlaps the instant claims. Finally, the Examiner has alleged that example 2 of Matsuo meets the requirement of the instant invention that the amount of white filler in phr is greater than the amount of carbon black in phr minus five. In rejecting Claim 4 under 35 U.S.C. §103(a), the Examiner alleges that Takeichi et al. discloses the use of a silicon or tin halide modified diene elastomer.

Claims 1-5 and 7-9 have been rejected under 35 U.S.C. §103(a) as unpatentable over Suzuki (U.S. Pat. No. 5,902,856). The Examiner alleges that Suzuki teaches an elastomeric filler mix with ranges of filler comprising silica and carbon black that overlap the instant claims. The Examiner also alleges that example 4 of Suzuki teaches a ratio of coupling agent to silica that is encompassed by the instant claims. While the Examiner acknowledges that the instant invention can not be “clearly envisaged” from Suzuki, the Examiner alleges “...that it would have been within the bounds of routine experimentation, as well as within the skill level of one

of ordinary skill in the art, to use an elastomeric filler mix which is both disclosed by Suzuki and encompassed within the scope of the present claims, and thereby arrive at the claimed invention.” (Office Action dated 08-28-2000 at page 8, paragraph 10).

Applicant respectfully traverses these rejections and asserts that the pending claims are nonobvious over Matsuo in view of Takeichi et al., Suzuki alone or Takagishi et al. alone. Claims 2-9 are dependent on independent Claim 1. Therefore, the response to these rejections will be addressed primarily to Claim 1.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. § 103, three criteria must be met:

- (1) There must be some suggestion or motivation, in the references themselves or in the knowledge of those of ordinary skill in the art to modify the reference or to combine the references;
- (2) There must be a reasonable expectation of success; and
- (3) The prior art reference(s) must teach or suggest all the claim limitations.

Criteria (1) and (2) must be present in the references themselves. See M.P.E.P. § 2143 et seq. Matsuo and Takeichi et al. considered independently or together fail to satisfy the recited criteria.

Applicant again invites the Examiner’s attention to amended Claim 1 which recites an “...amount of filler with...SiOH and/or AlOH surface functions in phr [that] is greater than or equal to the amount of carbon black in phr minus five phr.” Whether considered individually or together Matsuo and Takeichi et al. fail to either teach or suggest this limitation. Matsuo fails to teach or suggest whether the silica, the surface-treated carbon black or both are modified with SiOH and/or AlOH surface functions, and thus lacks the detail of instant claim 1. See e.g. Matsuo at Col. 3, lines 51-56. The Examiner alleges that the teaching of silicon or tin halide modified diene elastomers by Takeichi et al. renders instant claim 4 obvious. However, like Matsuo, Takeichi et al. fails to teach or suggest whether the silica, the surface-treated carbon black or both are modified with SiOH and/or AlOH surface functions, and thus lacks the detail of instant claim 1. See e.g. Takeichi et al. at Col. 3, lines 1-11 and Col. 10, lines 20-67. Thus, Takeichi et al. does not provide any additional teaching or suggestion which overcomes the failure of the Matsuo patent to teach or suggest the above-recited element of Claim 1.

Consequently, Claim 1 and all claims which are dependent on Claim 1, such as Claim 4, are nonobvious over Matsuo in view of Takeichi et al.

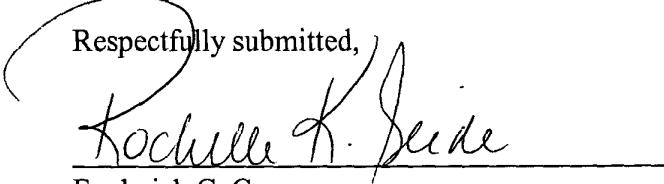
Similarly, Suzuki et al. alone and Takagishi et al. alone fail to satisfy the third criteria since they fail to either teach or suggest whether the silica, the carbon black or both are modified with SiOH and/or AlOH surface functions. Consequently, Claim 1 and all claims which are dependent on Claim 1 are nonobvious over Suzuki et al. alone and Takagishi et al. alone.

Notwithstanding the foregoing argument, Claim 1 and all claims which are dependent on Claim 1 are nonobvious over Suzuki et al. alone and Takagishi et al. for another reason. The Examiner alleges "...that it would have been within the bounds of routine experimentation, as well as within the skill level of one of ordinary skill in the art, to use an elastomeric filler mix which is both disclosed by Suzuki et al. [alone and Takagishi et al. alone] and encompassed within the scope of the present claims, and thereby arrive at the claimed invention." (Office Action dated 08-28-2000 at page 8, paragraph 10 and at page 9, paragraph 11). However, according to the M.P.E.P. 2144.05(II)(B), "[a] particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." See M.P.E.P. 2144.05(II)(B). See also *In re Antonie* (559 F. 2d 618, 1995 U.S.P.Q. 6 (C.C.P.A. 1977)). The ratio of the filler with SiOH and/or AlOH surface functions to carbon black was not previously recognized as a result-effective variable with respect to the effect of this ratio on cohesion and hysteresis. Neither Suzuki et al. nor Takagishi et al. teach or suggest such an effect. Consequently, Claim 1 and all claims which are dependent on Claim 1 are nonobvious over Suzuki et al. alone and Takagishi et al. alone.

4. Conclusion

In view of the amendments to the Claims and the remarks herein, Applicant believes that the present application is in condition for allowance. A timely issuance of a Notice of Allowance is respectfully solicited.

Respectfully submitted,


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